Evolution ZOOM

OPERATING MICROSCOPE
OWNER S MANUAL

SEILER
PRECISION MICROSCOPES

SEILER
PRECISION MICROSCOPES

We are here to serve you!

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Seiler has developed this device in due accordance with global quality requirements, giving priority to safety, electromagnetic compatibility and failure management, thereby establishing the Seiler Microscopes Evolution Zoom as a highly safe, reliable and robust device. The main quality standards employed were based upon the standards set out below:

DESIGN STANDARDS

- IEC 60601-1:1988 - Medical Electrical Equipment, Part 1 - General Requirements for Safety
- EN IEC 60601-1-2:2001Medical Devices - EMC Requirements
- EN 55011:1991- Radiated and Conducted Emission (Class 1, Group A)
- IEC 61000-4-2: 1995 (Electrostatic Discharge)
- IEC 801-3:1984 (Radiated Electromagnetic Field)
- IEC 61000-4-4:1995 (Electrical Fast Transient / Burst)
- IEC 61000-4-5:1995 (Electrical Surge)
- CISPR 14 (Click)
- BS EN 1441: 1998 (Risk Analysis)

SAFETY GUIDELINES

The Seiler Microscopes Evolution Zoom is a class 1 low risk device - in accordance with FDA (Federal Drug Association EE UU) 21CFR, European Directive 93/42 on medical devices and ANVISA-PC1, 26/01/1996. We do recommend, however, that the Guidelines set out below be followed:

- Before switching on and using the device, follow the instructions set forth on the labels and carefully read this User's Manual. Carefully read the recommendations set out below any "Please Note" headings;
- This device IS NOT SUITABLE FOR USE IN THE PRESENCE OF INFLAMMABLE MIXTURES CONTAINING AIR, OXYGEN OR NITROUS OXIDE;
- This device is not to be used in the home;
- This device must always be used correctly - see the Declaration of Conformity;
- Correctly check the output power level (visible light). Use the visible light output with caution - this could damage the patient's eyes if there is prolonged, improper exposure to the eyes;
- Ensure the appropriate protection is used during each procedure.
- Check the availability of a spare bulb for use before embarking upon any procedure. Burned out bulb should only be replaced after checking if the device is switched off and has cooled down;
- Connect the device to a no break device using high-quality batteries, for which a minimum power of 1000W (semi-sinusoidal) has been properly calibrated. If this is not done, the device may not support the high voltage;
- Take care when handling the Optical Fiber Cable. It is made up of extremely fine, very sensitive fibers. Improper use can break these fibers affecting the performance of the Cable.
- Please contact Seiler should any special filters be required.

1. Introduction

DEAR CUSTOMER, THANK YOU FOR CHOOSING THIS PRODUCT.

The Seiler Microscopes Evolution Zoom, you have chosen to purchase is a modern, reliable device, which has been designed using the most advanced optical design tools available on the market. In addition to its optical superiority, the design was based around refining image quality and providing a product, which is ergonomic and easily handled by users.

The Seiler Microscopes Evolution Zoom in the range are intended to be used exclusively for magnifying the visual field, giving the user an excellent level of comfort and improved visual acuity during the activities. This equipment is not specified for carrying out measurement work.

It is important to emphasize that its use as support equipment does not remove the need for professional skill. The equipment uses halogen bulbs to produce visible light for illuminating the visual field.

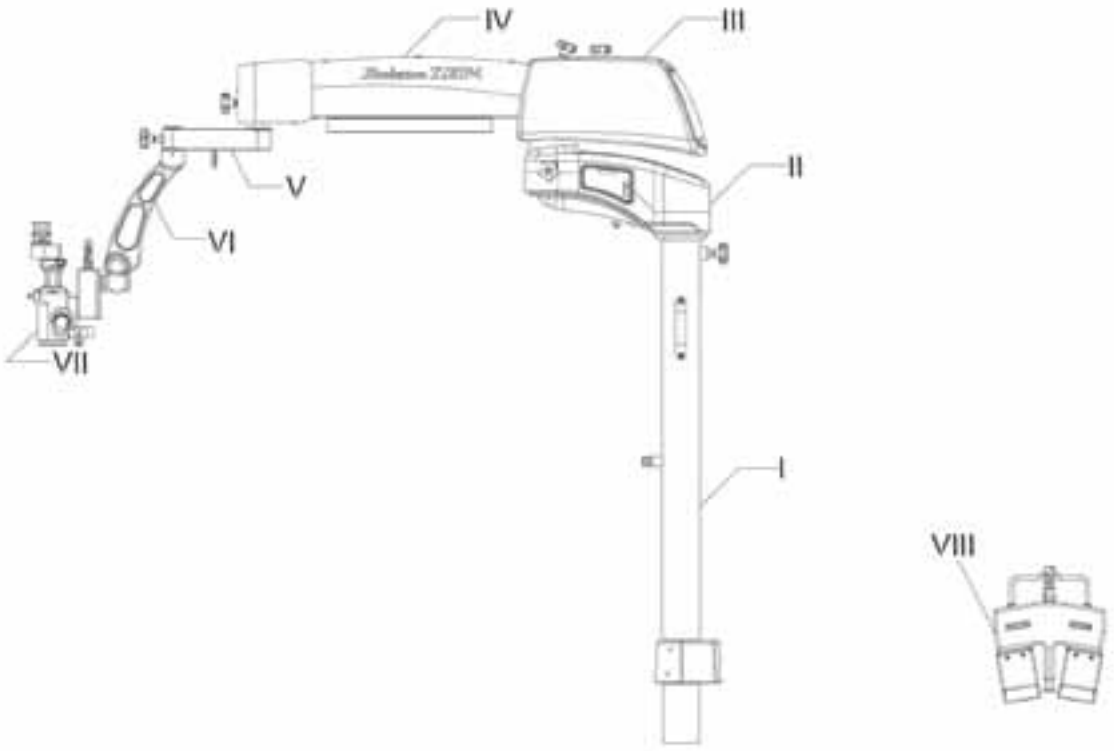
The Seiler Microscopes Evolution Zoom is manufactured according to stringent standards, involving precision mechanics and optics in order to ensure a high-quality final product.

All optical components have undergone antireflective, multi-layer treatment, which ensures the efficiency of said components across the entire visible spectrum.

Please contact us immediately should you require any further information or wish to make a suggestion or complaint or register a doubt concerning the components, devices or accessories. Our team is always ready to provide assistance and guidance so that the full potential of this device can be realized.

2. Components

To make it easier to identify the sub-parts of the microscope, the Seiler Microscopes Evolution Zoom is divided into modules, as shown in the figure below:



Modules

STRUCTURAL
The mechanical module, with structural function, consists of Column (I) and Pantographic Arm (IV).

ILLUMINATION:
Joined to the Pantographic Arm (IV) is the Illumination Box (III), which generates light. The light is supplied to the working area by means of an Optical Fiber Cable to the microscope's Optical Assembly (VII), which is made up of a series of lenses including the Objective Lens.

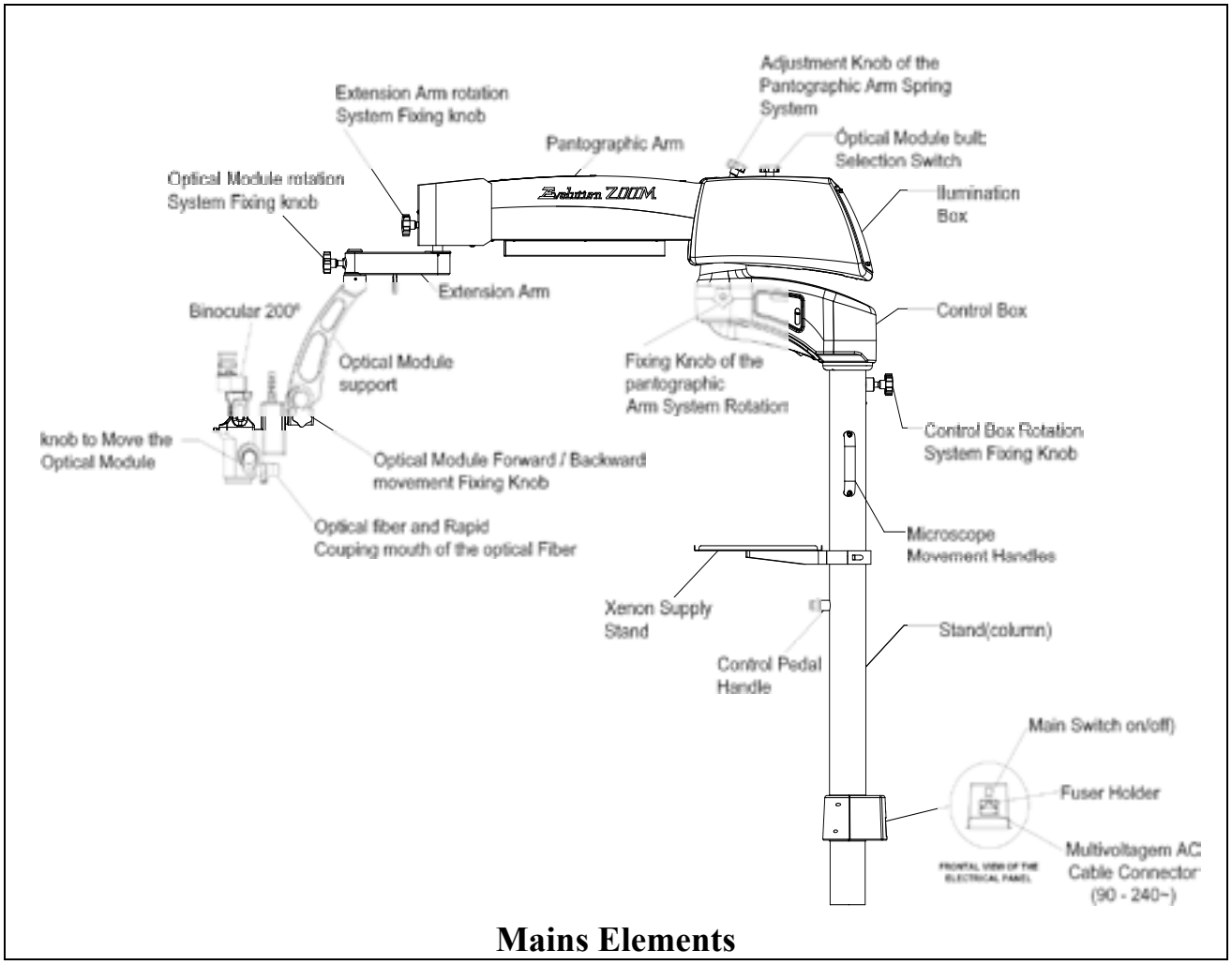
CONTROL
The Control Box (II) joins the electronic circuits for the Microfocusing, Illumination Brightness Control, Zoom and XY System functions of the microscope.

OPTICAL MODULE
The Optical Module (VII) comprises: Objective Lens, Magnification System (Zoom), and Binocular Head (Fixed at 45º or Inclinable).

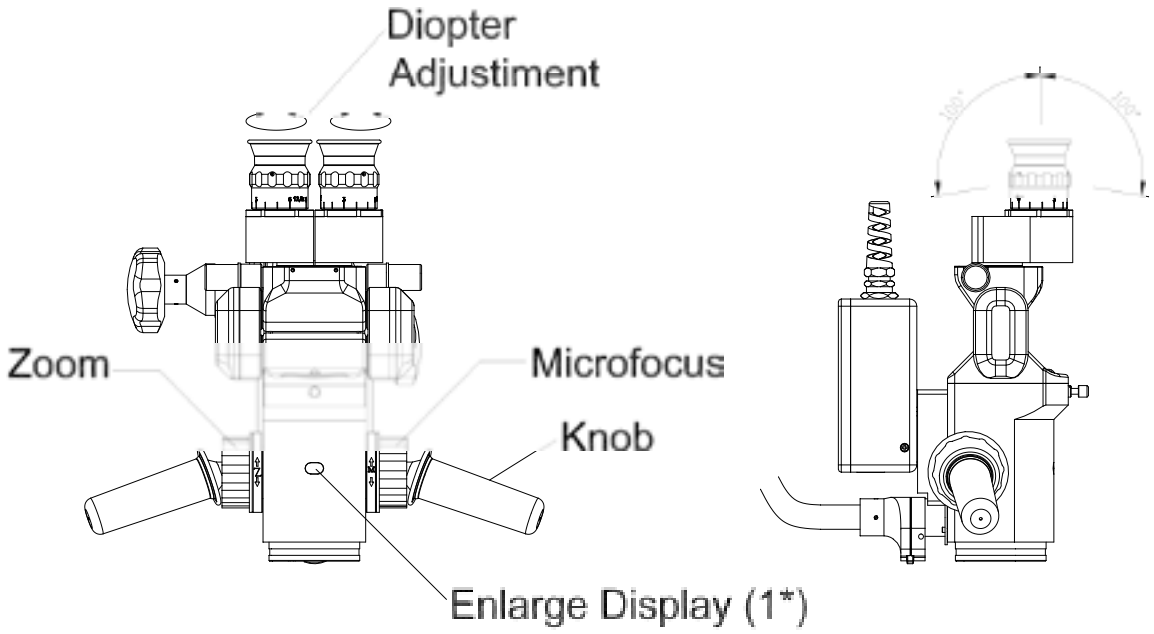
CONTROL PEDAL

The Control Pedal (VIII) is fundamental to the perfect functioning of the microscope. If it is not connected to the microscope, the device will not work.
Its functions include adjusting the Motorized Microfocus and Zoom.

The following figures present the mains elements of the microscope in more detail.

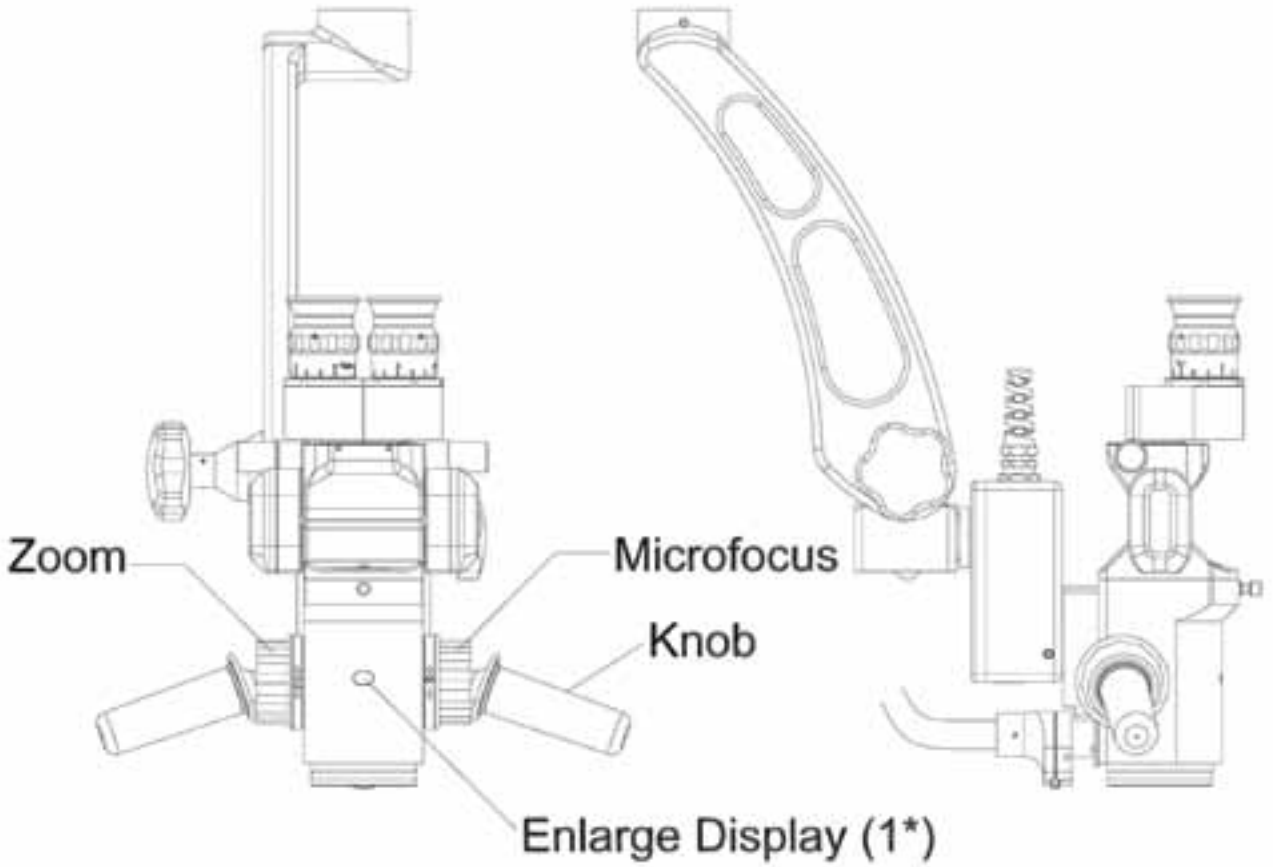

Adjustment Knob of the Pantographic Arm Spring System
Extension Arm rotation System Fixing knob
Pantographic Arm
Optical Module built: Selection Switch
Optical Module rotation System Fixing knob
Ilumination Box
Extension Arm
Binocular 200°
Control Box
Optical Module support
Fixing Knob of the pantographic Arm System Rotation
knob to Move the Optical Module
Control Box Rotation System Fixing Knob
Optical Module Forward / Backward movement Fixing Knob
Optical fiber and Rapid Couping mouth of the optical Fiber
Microscope Movement Handles
Xenon Supply Stand
Stand(column)
Control Pedal Handle
Main Switch on/off)
Fuser Holder
Multivoltagem AC Cable Connector (90 - 240~)

Mains Elements

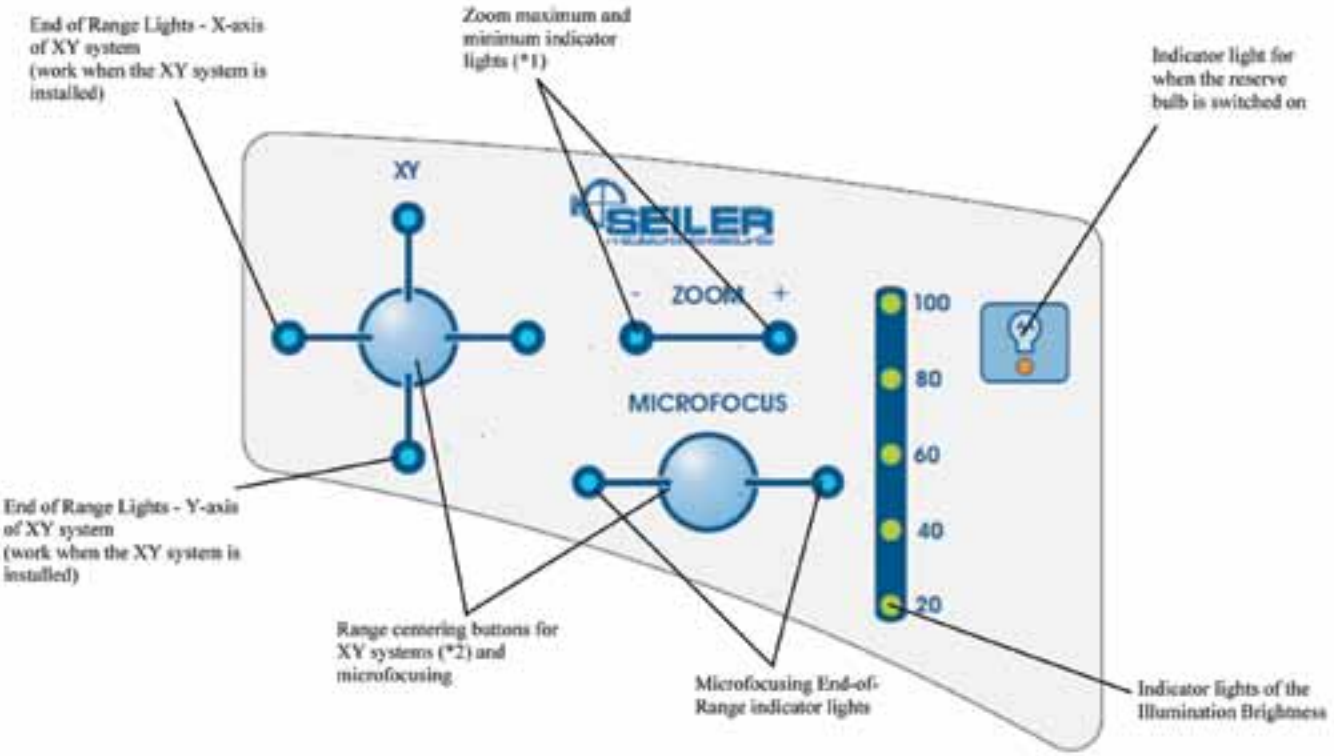


Zoom Optical Module with 200º Inclinable Binocular Head (Standard Binocular Head)

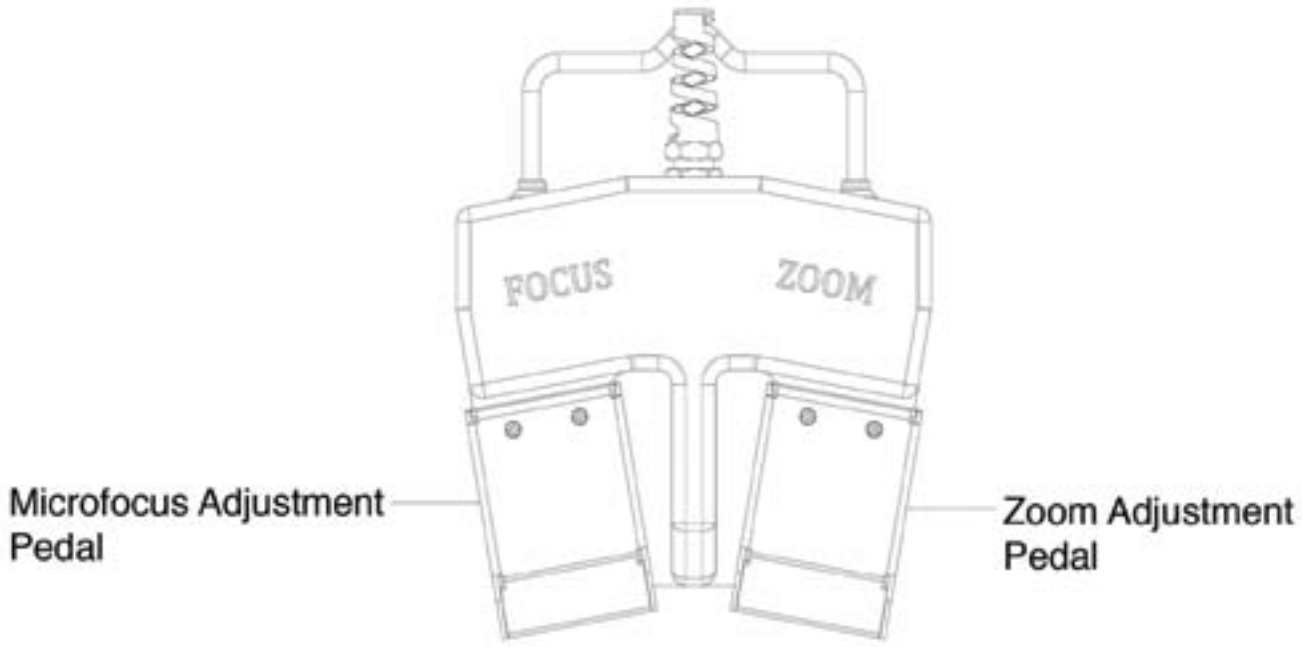
In this configuration the two knobs on the sides of the Optical Module can be assembled in six different positions, in accordance with user preference. To do this, unscrew the nut that fastens the knob to the body, remove it, change its position and fasten it in place again.



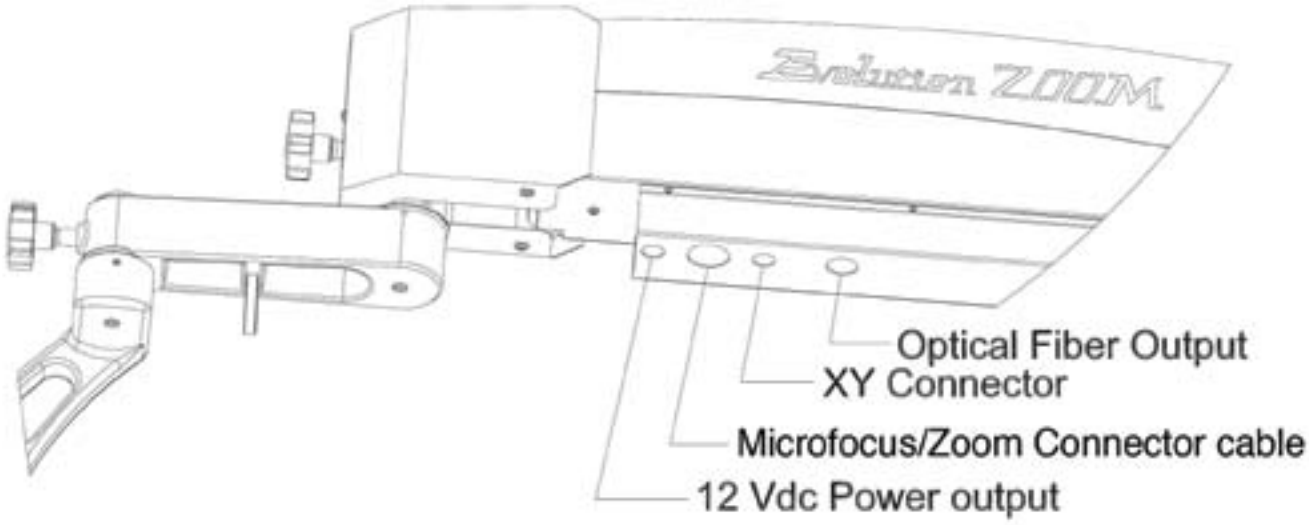
Optical Module with a continuous increase in magnification system – Zoom


End of Range Lights - X-axis of XY system (work when the XY system is installed)
Zoom maximum and minimum indicator lights (*1)
Indicator light for when the reserve bulb is switched on
XY
SEILER
- ZOOM +
100
80
60
40
20
MICROFOCUS
End of Range Lights - Y-axis of XY system (work when the XY system is installed)
Range centering buttons for XY systems (*2) and microfocusing
Microfocusing End-of-Range indicator lights
Indicator lights of the Illumination Brightness

Control Panel



Control Pedal



Lower View of Pantographic Arm, showing electrical connections

3. Assembly

Please note: this manual should be read carefully in order to properly assemble the Seiler Microscopes Evolution Zoom. The user shall be solely responsible for any other type of procedure not set out in this manual to assemble/install this product and any misuse of tools.

UNPACKING

The Seiler Microscopes Evolution Zoom is placed in boxes to protect it during transportation.
Check the boxes for damage or signs of violation: contact Seiler immediately in the event of any irregularity. The Seiler Microscopes Evolution Zoom should ideally be transported in its original packaging. We recommend that said packaging be kept in case it is required in the future.

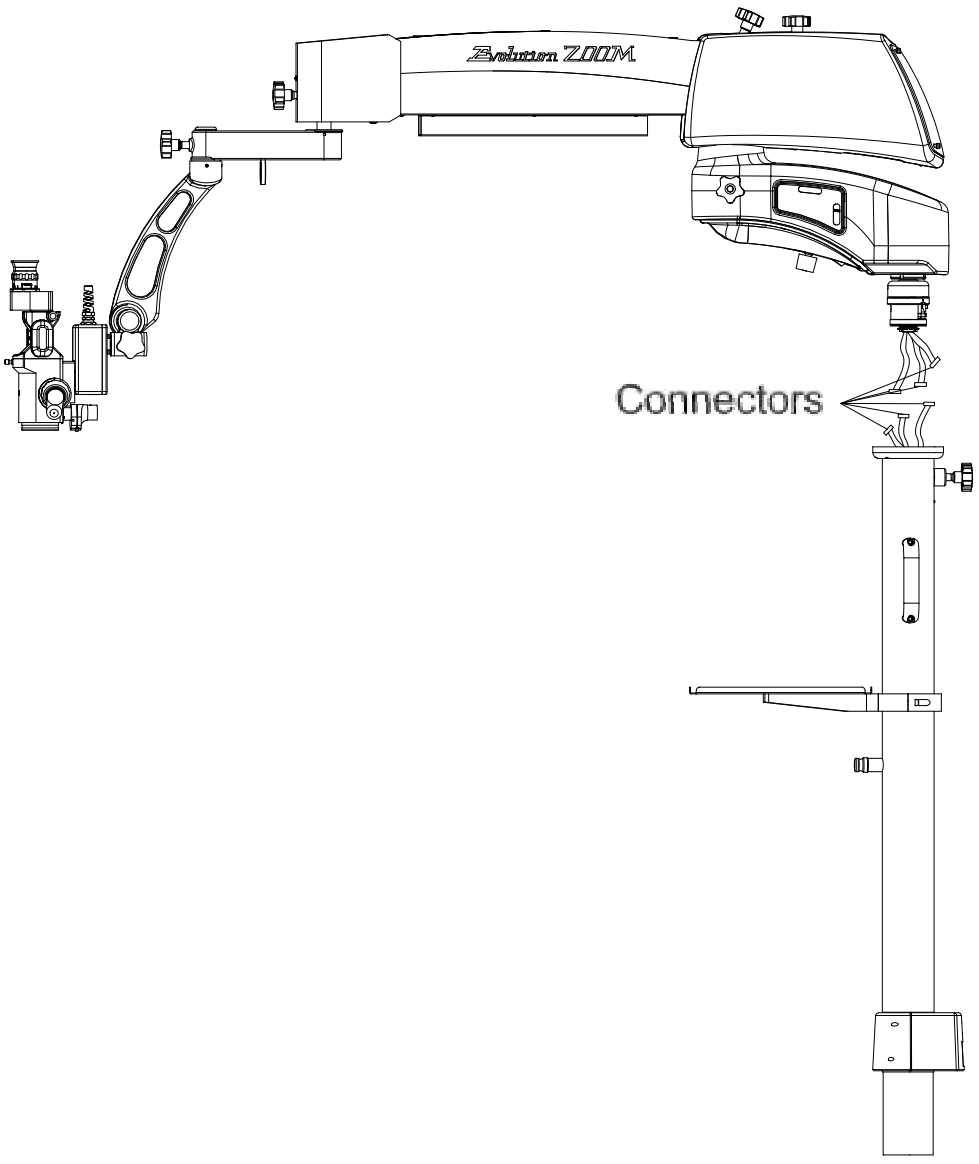
Please check whether box contains the items set out below:

- This User's Manual;
- Column (I) with Control Box (II) already attached;
- Illumination Module (III) and Pantographic Arm (IV) (with optical fiber and electrical cables installed) already attached;
- Optical Module (VII) – Zoom - already connected to the Optical Module Support System;
- Screw to attach the Base to the Column (I);
- Accessories, if required.
- AC Multivoltage Cable 90-240 ~ Volt
- Protective cover for the Optical Module;
- 2 pairs of sterilizable protectors for the Optical Drum Knobs;
- 1 spare halogen bulb;
- Two 5A fuses;
- Optical Module –Zoom – already connected to Optical Module Support system;
- 1 pair of knobs of the Optical Module;
- 1 pair of sterilizable protectors knobs of the Optical Module;
- Multifunction Pedal (*1) and/or (*2)

COLUMN, CONTROL BOX AND PANTOGRAPHIC ARM

Please note: the greatest care should be taken when handling modules II, III and IV, since module III are finished with an outer coating consisting of injected layers which have no structural function. Any sharp impact on one of these layers may result in chinks or scratches or other damage.

To assemble the Microscope, follow the instructions below:



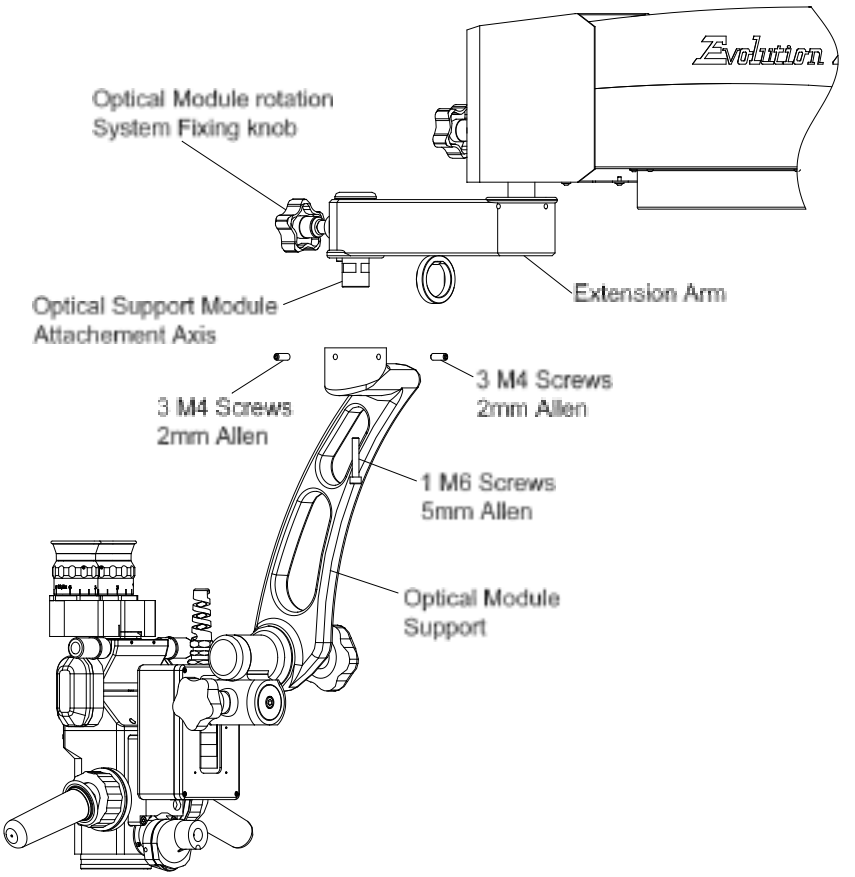
- Connect the Connectors according to identification;

OPTICAL MODULE

Please note: The Optical Module is the most delicate of the Modules. Please take care when assembling, using and transporting the module. This Module is assembled to the Optical Module Support.

- Fitting the Optical Module Support in the axis of the Extension Arm.
- Put the screw and tighten strongly with 5mm Allen key, next that, tighten the three other screws located on the Optical Module Support with the 3 mm Allen key;
- Insert the Optical Fiber Cable terminal into the Rapid Coupling Mouth.

Please note: Take care when handling the Optical Fiber Cable. It is made up of extremely fine, very sensitive fibers. Improper use, repeated stretching and bending movements, amongst other things, can cause them to break affecting the performance of the Cable or even rendering it useless.

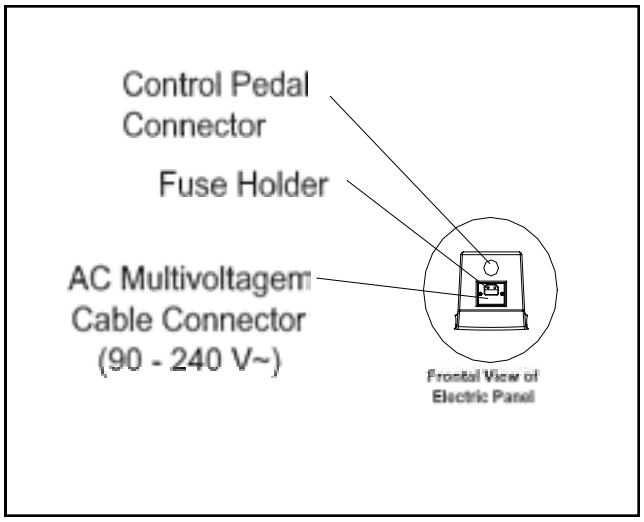


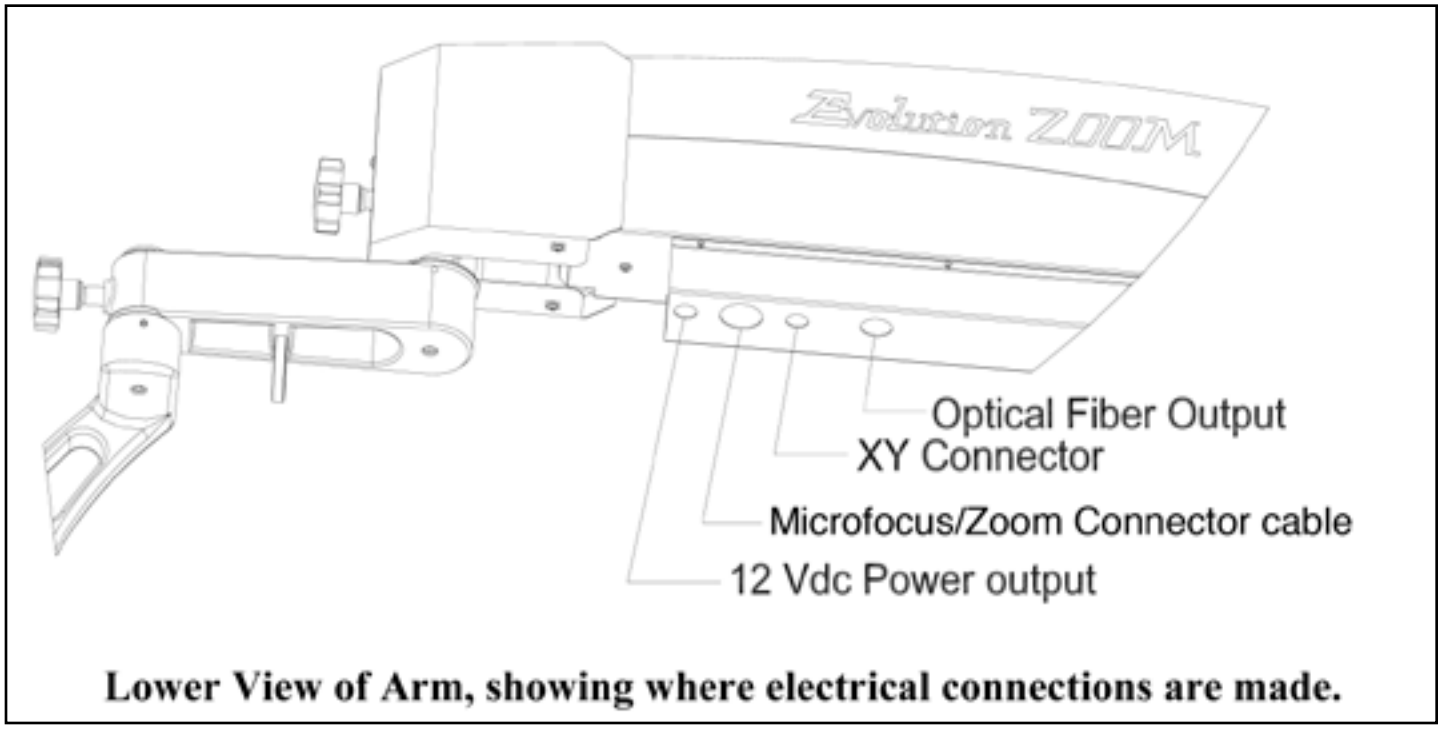
Optical Module Support Assembly

ELECTRICAL CONNECTIONS

Please note: Please take care when connecting the cables as the connector pins are fragile. When it is necessary to use a transformer, it is recommended to use one that is insulated.
Connect the cables following the steps below:

- Connect the Power Cable to the Multivoltage AC Cable Connector on electrical panel of the Column;
- Connect the Pedal Cable to the Control Pedal Connector;
- Connect the cable leading out of the microfocus system to the Microfocus/Zoom Cable Connector;
- Connect the XY Connection cable to the XY System ;
- Connect the video system power cable to the 12VDC Power Outupt connector. (where video system is included)





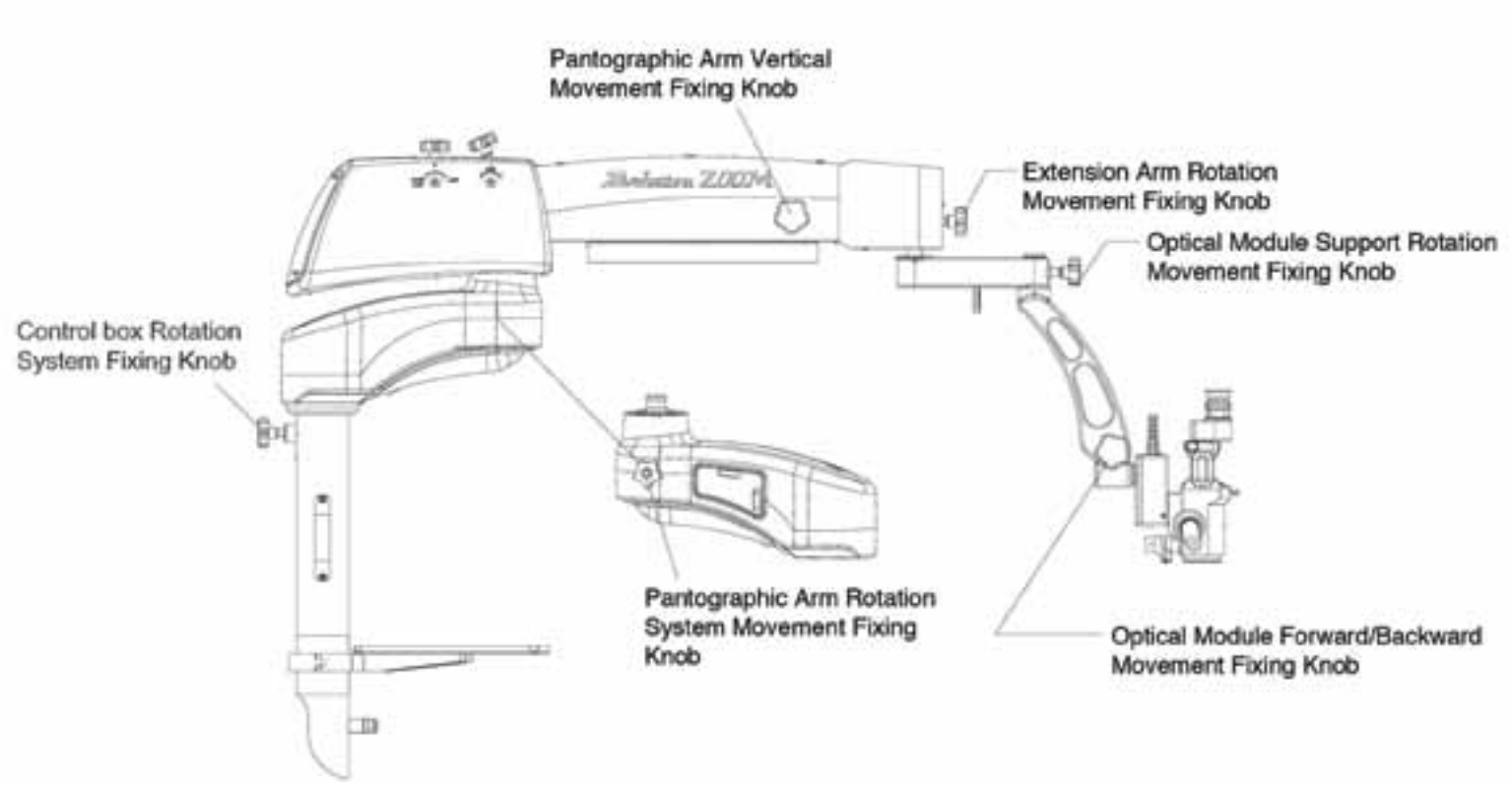
Lower View of Arm, showing where electrical connections are made.

4. Using the Microscope

Please note: Users are requested to carefully read this manual and familiarize themselves with the possible movements and settings so as to be able to use the Seiler Microscopes Evolution Zoom properly. This device should only be used by qualified personnel.

MOVING THE OPTICAL MODULE

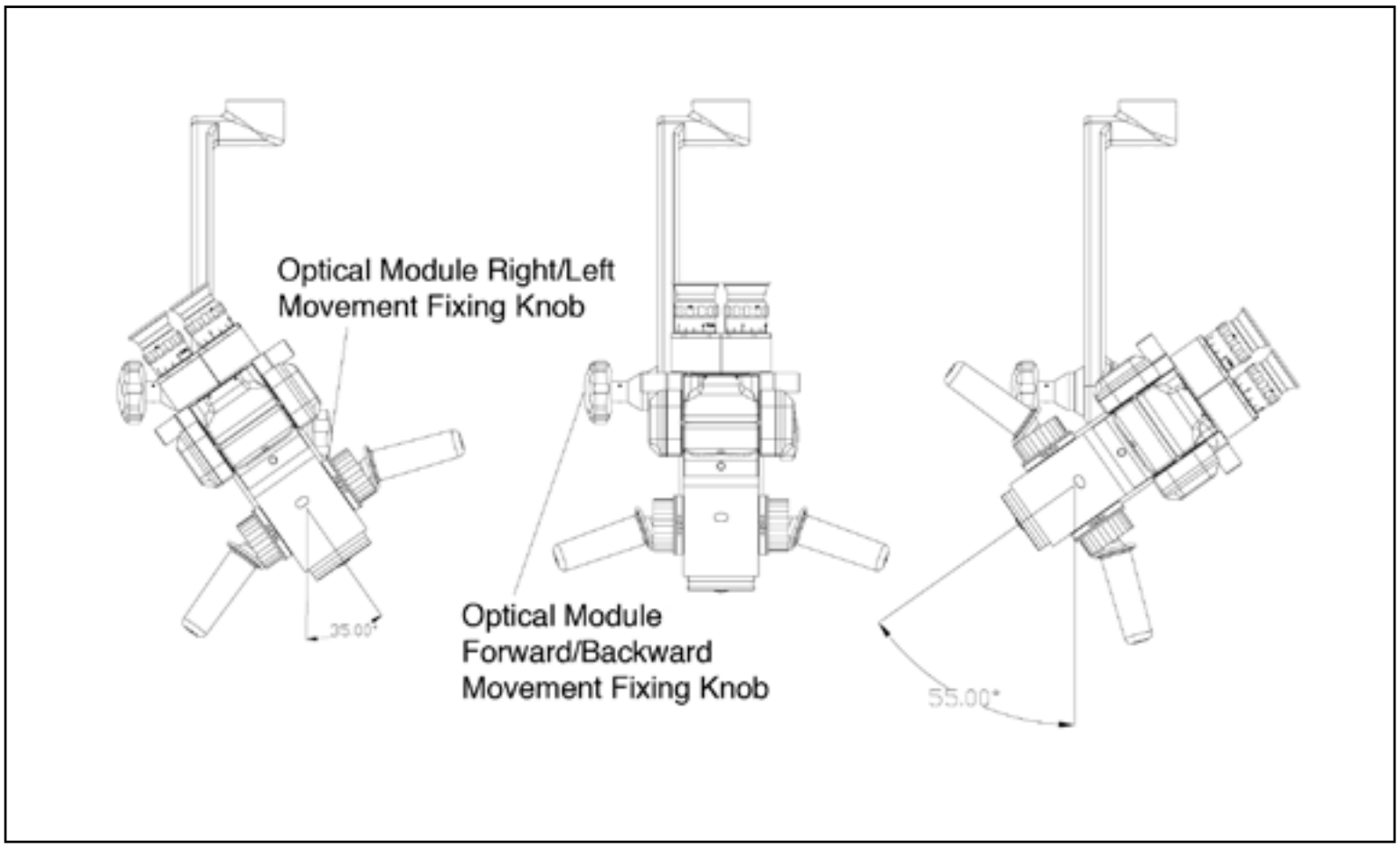
The Microscopes Evolution Zoom has been designed to be easily adjusted and handled while also guaranteeing maximum comfort and stability.



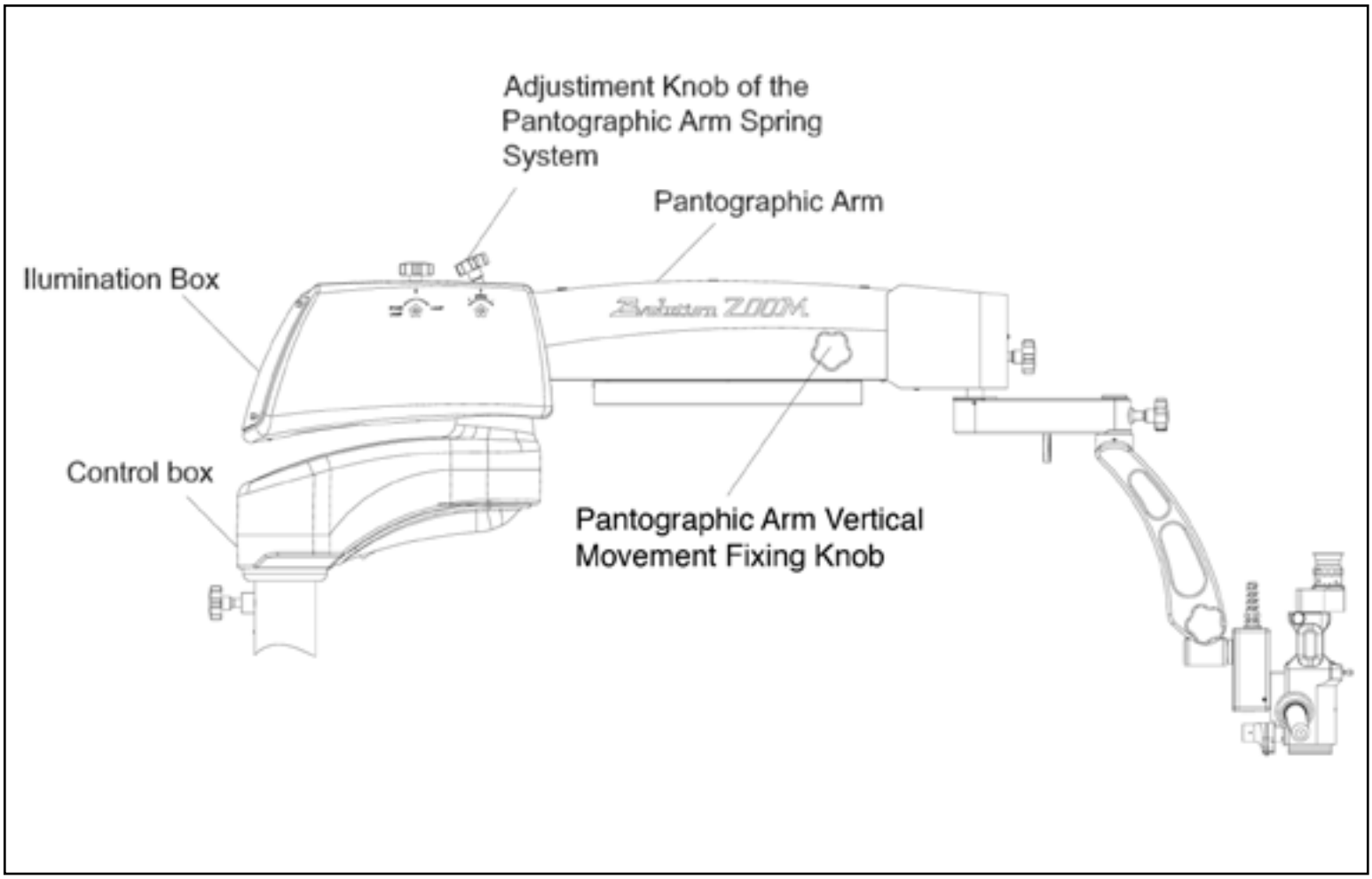
- To move the Optical Module and put into the position to be used, hold it by the Sterilizable Knobs to move the Optical Module until the desired position; note it is important to check ALL the knobs:
- Extension Arm Rotation System Fixing Knob
- Control Box Rotation System Fixing knob
- Pantographic Arm Rotation System Fixing Knob
- Pantographic Arm Vertical Movement Fixing Knob
- Loosen all knobs before moving the Optical Module
- Place the device on the desired position, tighten again the Knobs to ensure stability to the device. It is possible to regulate the turning force, by tightening them slightly.

The Optical Module of the Microscopes Evolution Zoom can be turned to left or right. It can be made by loosing the Optical Module Right/Left Rotation System Fixing Knob, positioning the module as desired and tighten again this knob. The Optical Module can also be turned to back and front position by loosing the Optical Module Forward/Backward Movement Fixing Knob, adjusting its position and tighten it again.

These knobs can be left slightly tightened in order to allow the Optical Module to rotate, but not freely.



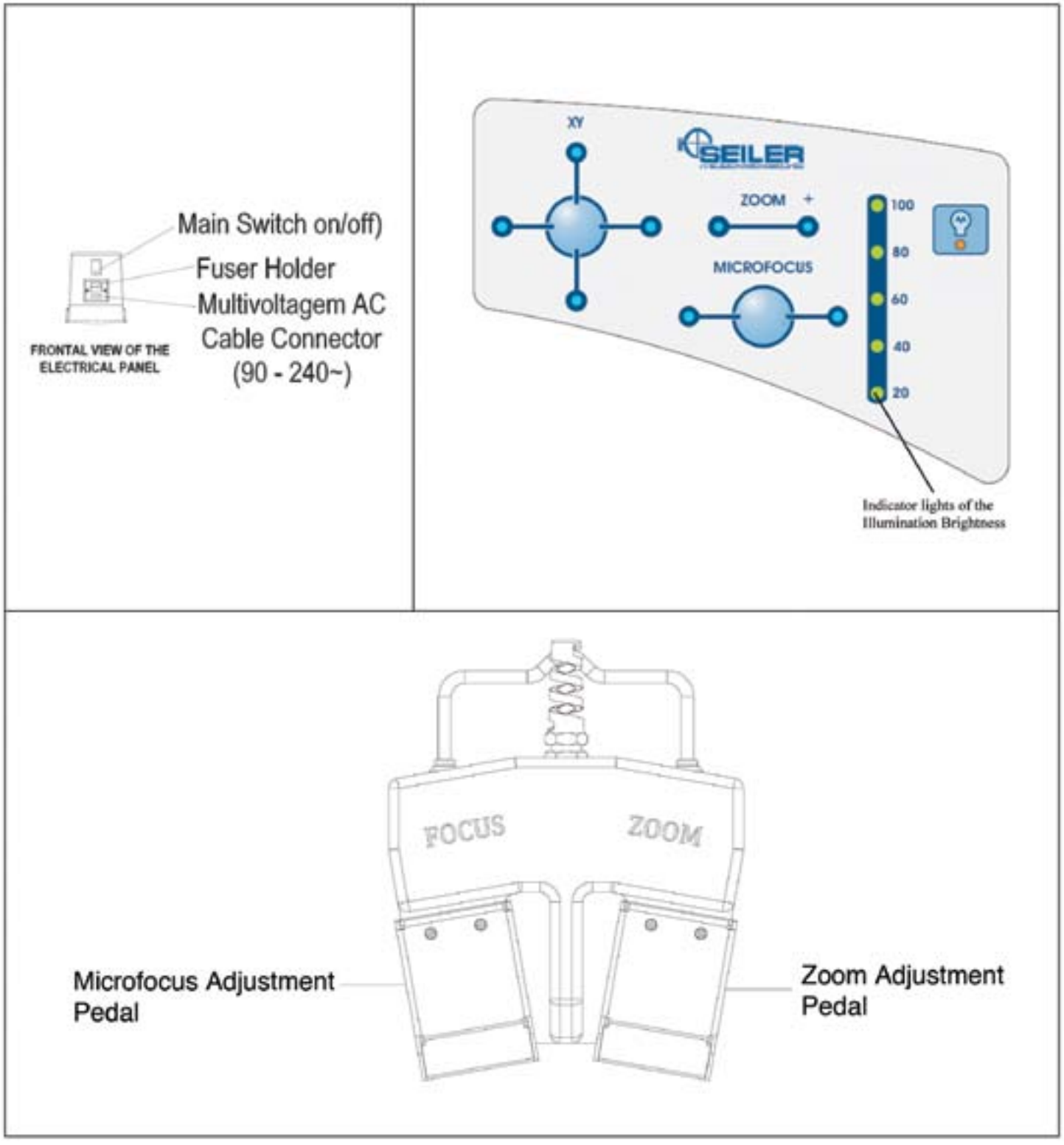
- ***Please note:*** there is a spring inside the Pantographic Arm to ensure that it moves smoothly and accurately; the spring's tension is not preset at the factory, because its tension needs to be slackened during transport. It must therefore be adjusted using the Spring Adjustment Knob. Where new accessories are added to the Optical Module, increasing the weight to be balanced by the Pantographic Arm, the Spring Adjustment Knob should be turned anti-clockwise. Pay attention to any possible involuntary downward movement of the set when increasing the weight by adding accessories.



Ideal Setting: when moved upwards or downwards, the Pantographic Arm remains in the new position without having to tighten the *Locking Knob of the Pantographic Arm Joint*.

SWITCHING ON THE UNIT

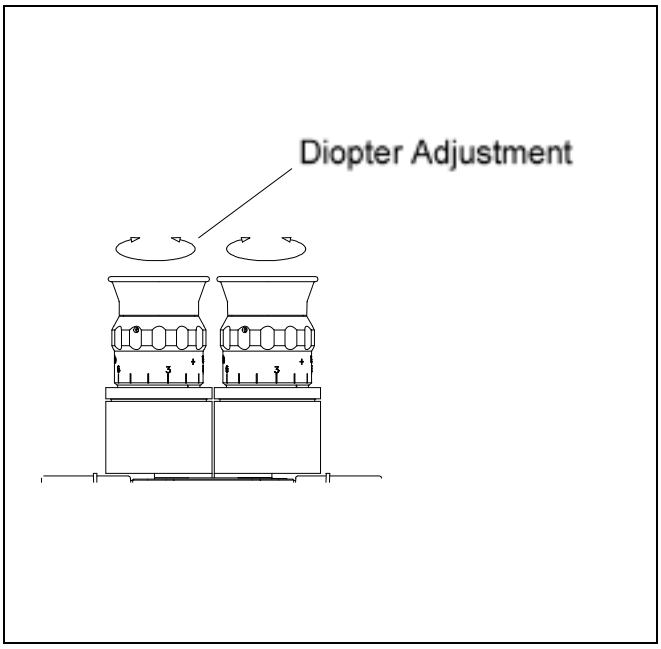
- Connect the Power Supply Cable to the Electrical Panel's AC Cable Connector and to grounded electrical socket;
- Press the Main On/Off Switch located on the Control Box;
- Adjust the illumination brightness by turning the Illumination Brightness Adjustment Button located on the Control Box;
- The Pedal can be used to control the Zoom and Microfocus.



Please note: the Pedal electrical circuit is not completely sealed (waterproof); avoid spilling water directly onto it and protect it when cleaning the area where the unit is installed, hanging it by its *Transport Handle* from the *Pedal Handle* attached to the Column.

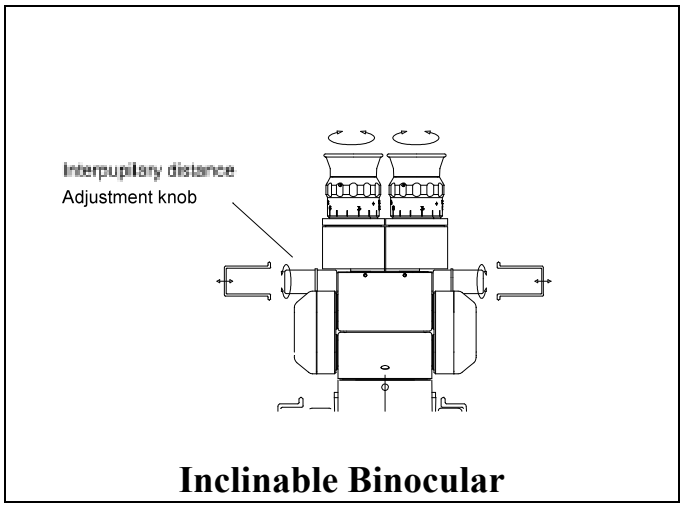
DIOPTER ADJUSTMENT.

- The diopter adjustment aims at adapting the microscope to the user's eyes, reaching the maximum efficiency in the image view in the microscope. This adjustment allows for both eyes to see focused-way object.
- The diopter adjustment should be done in the ring, which is located below the eyepiece. There is a reference trace – fixed – for better guiding this adjustment.
- Check before starting any adjustment, if zero (0) of the ring coincides with the fixed reference trace.
- It is possible to adjust between –6 and +6 diopters.



INTERPUPILLARY DISTANCE ADJUSTMENT

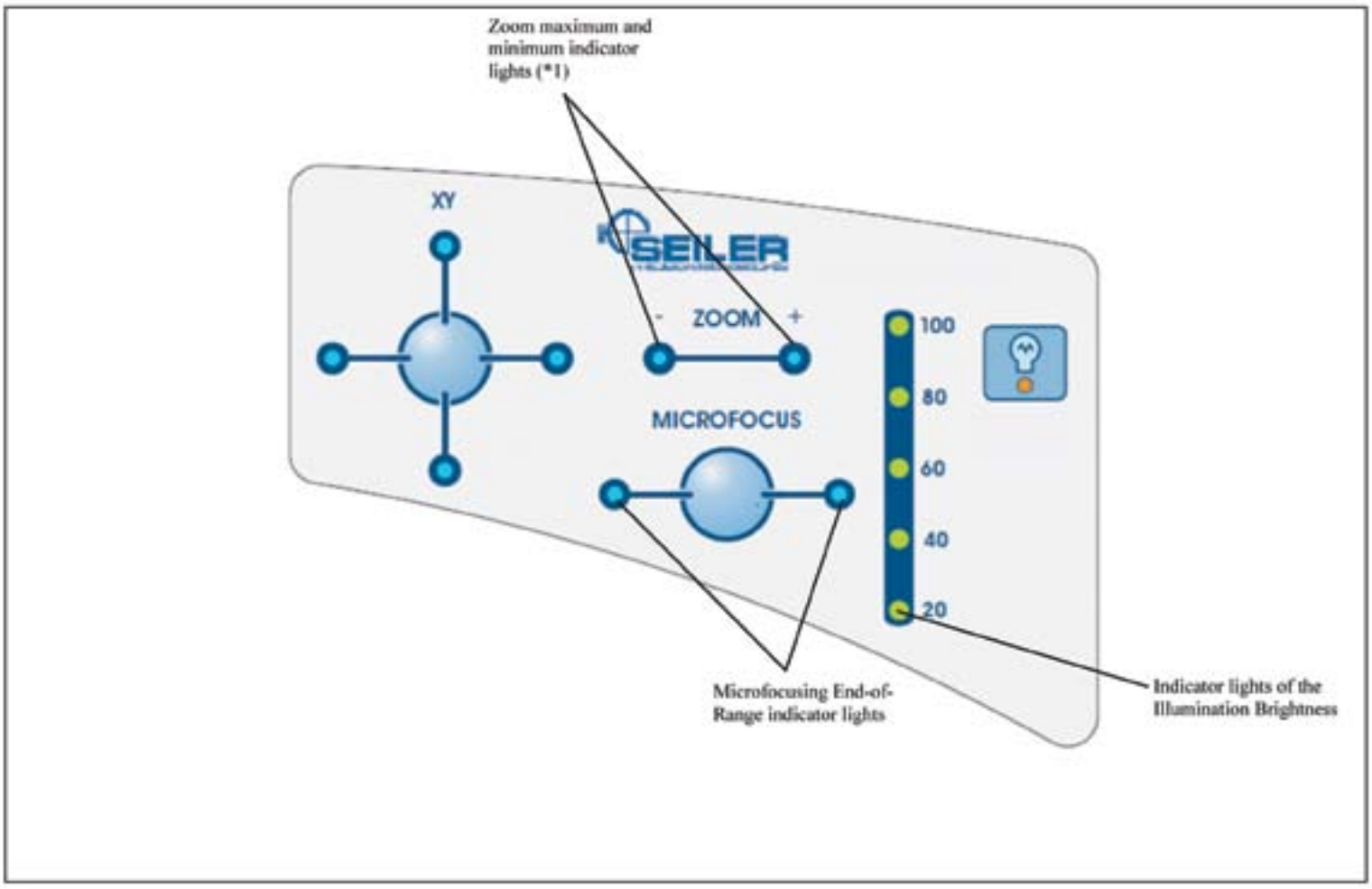
- The interpupillary distance adjustment aims at the adaptation of the equipment to your interpupillary distance so that to reach the ideal work adjustment. The ideal distance is reached when the user views a single image (overlapping of eyepieces images);
- For models with an Inclinable Binocular Head, adjustments are carried out manually by turning the side knob below.

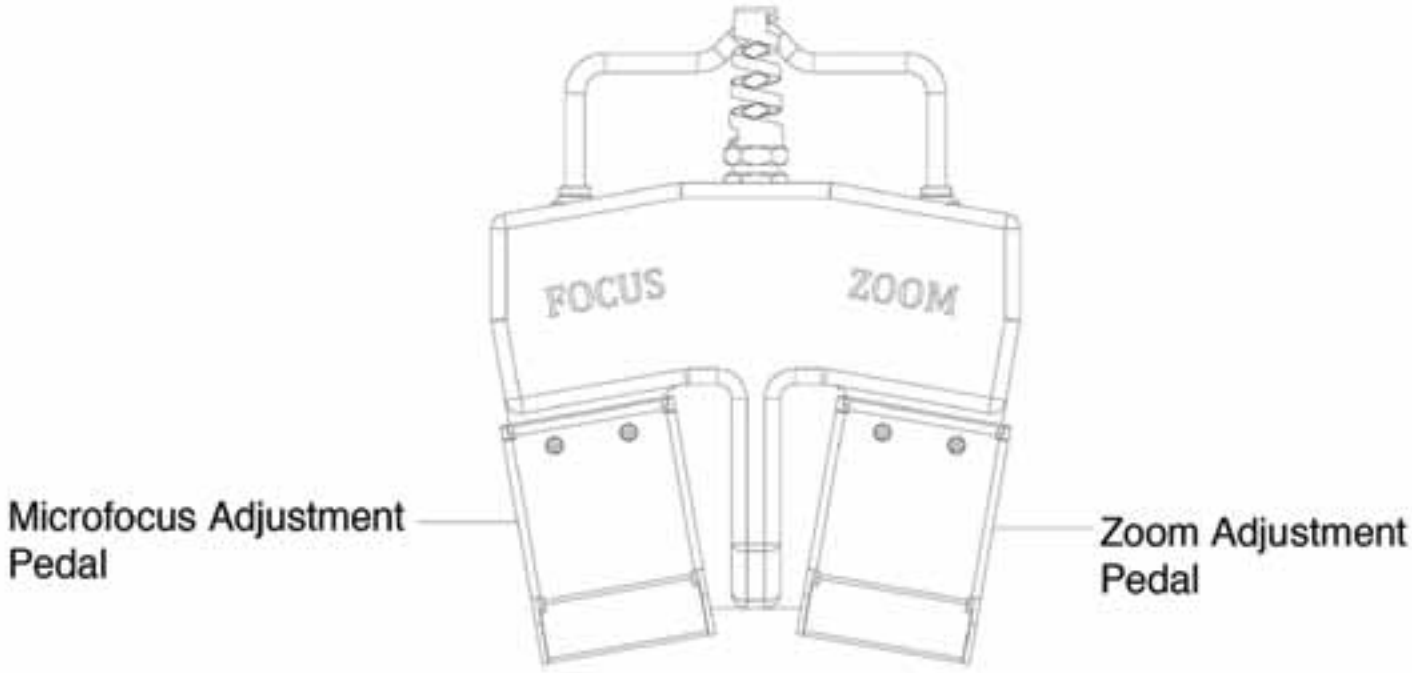


Inclinable Binocular

ADJUSTING THE FOCUS, DIOPTERS AND INTERPUPILLARY DISTANCE

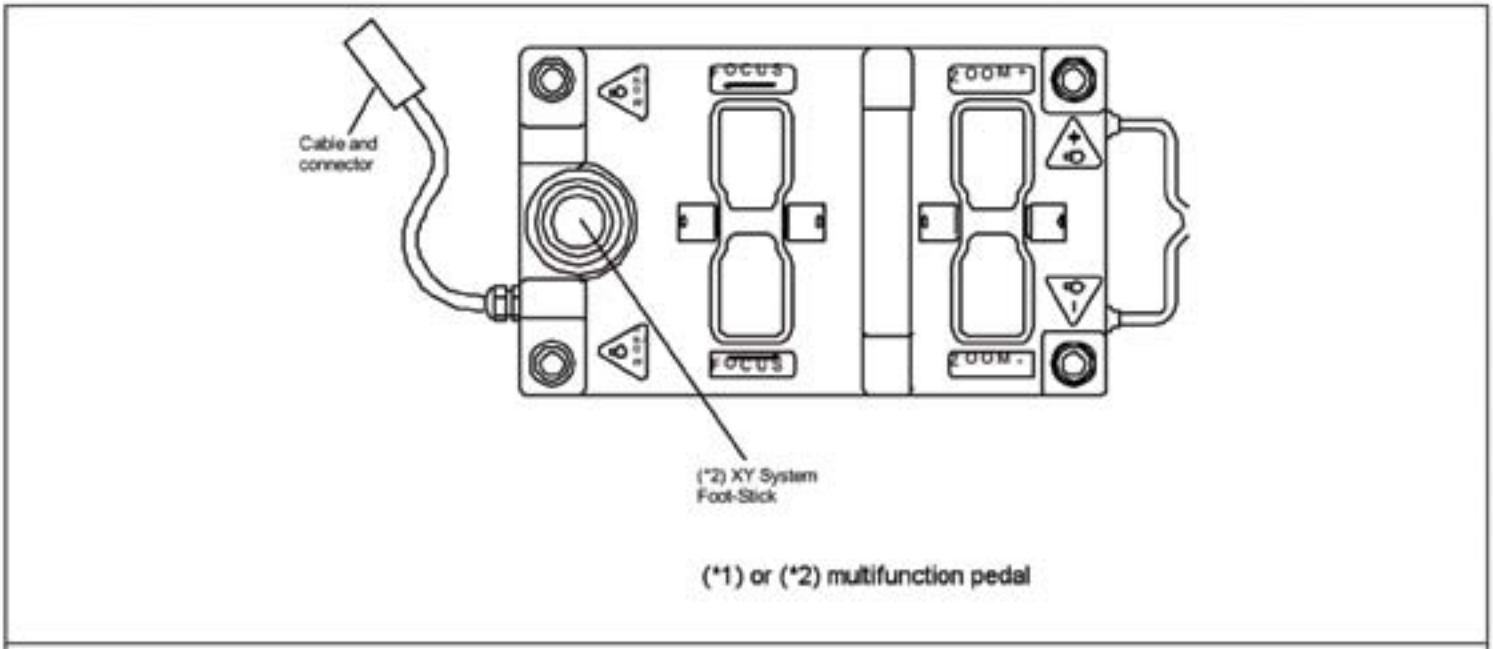
- Center the Microfocus System, press the Microfocus Centering Button;
- Loosen the Locking Knob of the Pantographic Arm Joint, then position the microscope Optical Module at a distance from the working area which is roughly the same focal distance from the objective lens in use and retighten it lightly if required;
- The fine focus adjustment is made using the microfocus adjustment pedal on the Pedal;
- On the Control Panel there are two red indicator lights, which correspond to the microfocus function. These light up during adjustment, indicating the direction of the movement. When the microfocusing end-of-range is reached, a beep is emitted when the pedal is pushed down. When the microfocus is at its end-of-range, the indicator light remains lit up;
- For an extra-fine focus adjustment, you may select the maximum possible magnification of the Optical Module and find the best possible focus using the microfocus system. This will mean that, for increases to other controls, the focus will already be at its optimum;

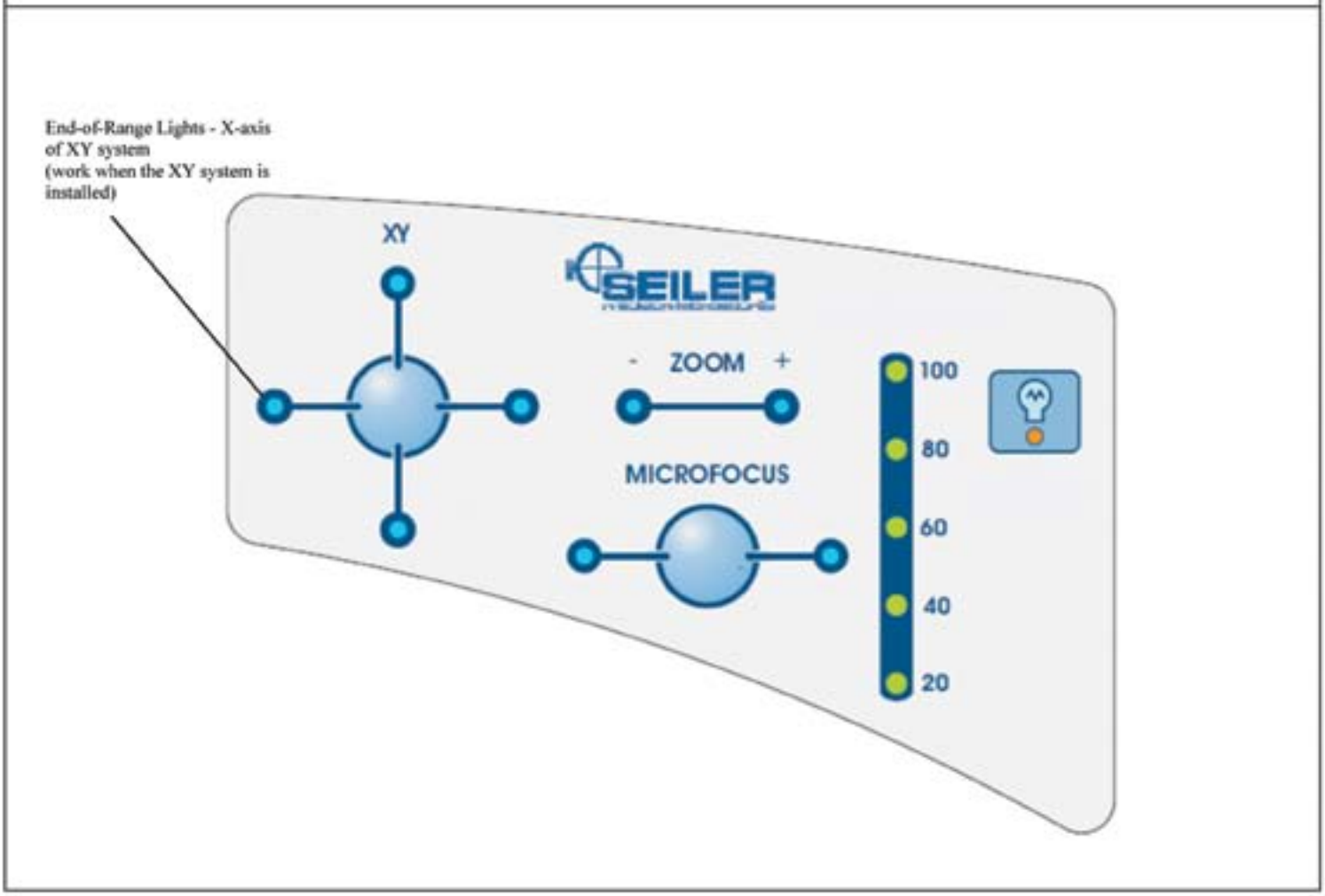



FOCUS
ZOOM
Microfocus Adjustment Pedal
Zoom Adjustment Pedal

USING THE XY SYSTEM (OPTIONAL)

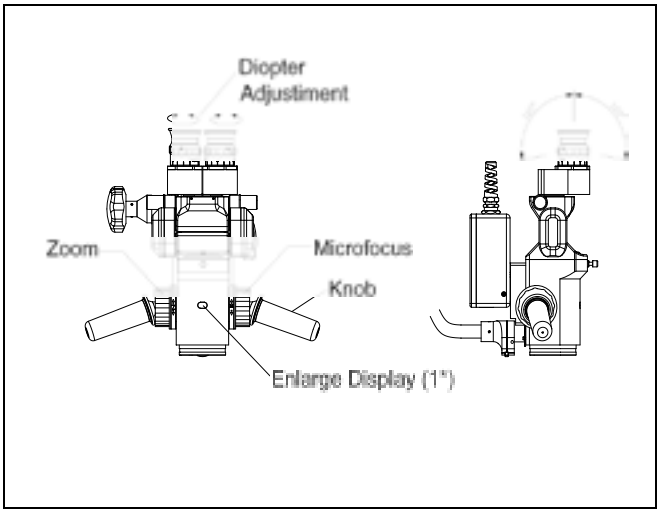
- The XY system can be moved using the Foot Stick.
- Just as with the microfocus function, light indicators show the direction of movement and a beep is emitted when the end-of-range is reached;
- To center the two shafts at the same time, press the Center button located between the four XY light indicators.





USING THE INCLINABLE BINOCULAR

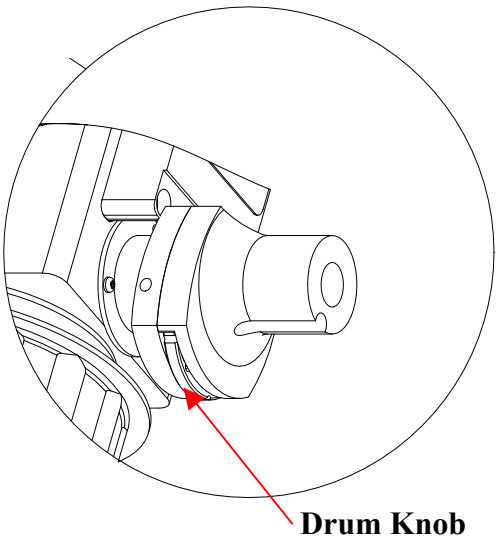
- The Inclinable Binocular Head can be moved (inclined) manually;
- In order to do this, incline the eyepieces manually to the position desired.

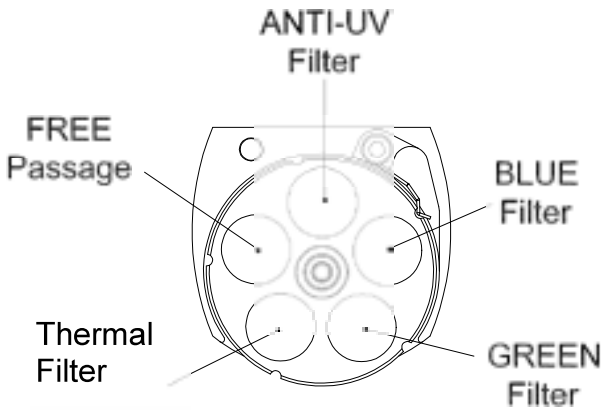


ULTRA VIOLET (UV) FILTER

Besides the conventional filters, there is also an Ultraviolet (UV) Filter. These are all attached to the filter drum. The Ultraviolet (UV) Filter is assembled at the factory and its purpose is to prevent the passage of ultra violet light, which is why the image viewed through the binocular appears slightly yellow.

To select the filters, just turn the knob on the drum, as shown in below figures.





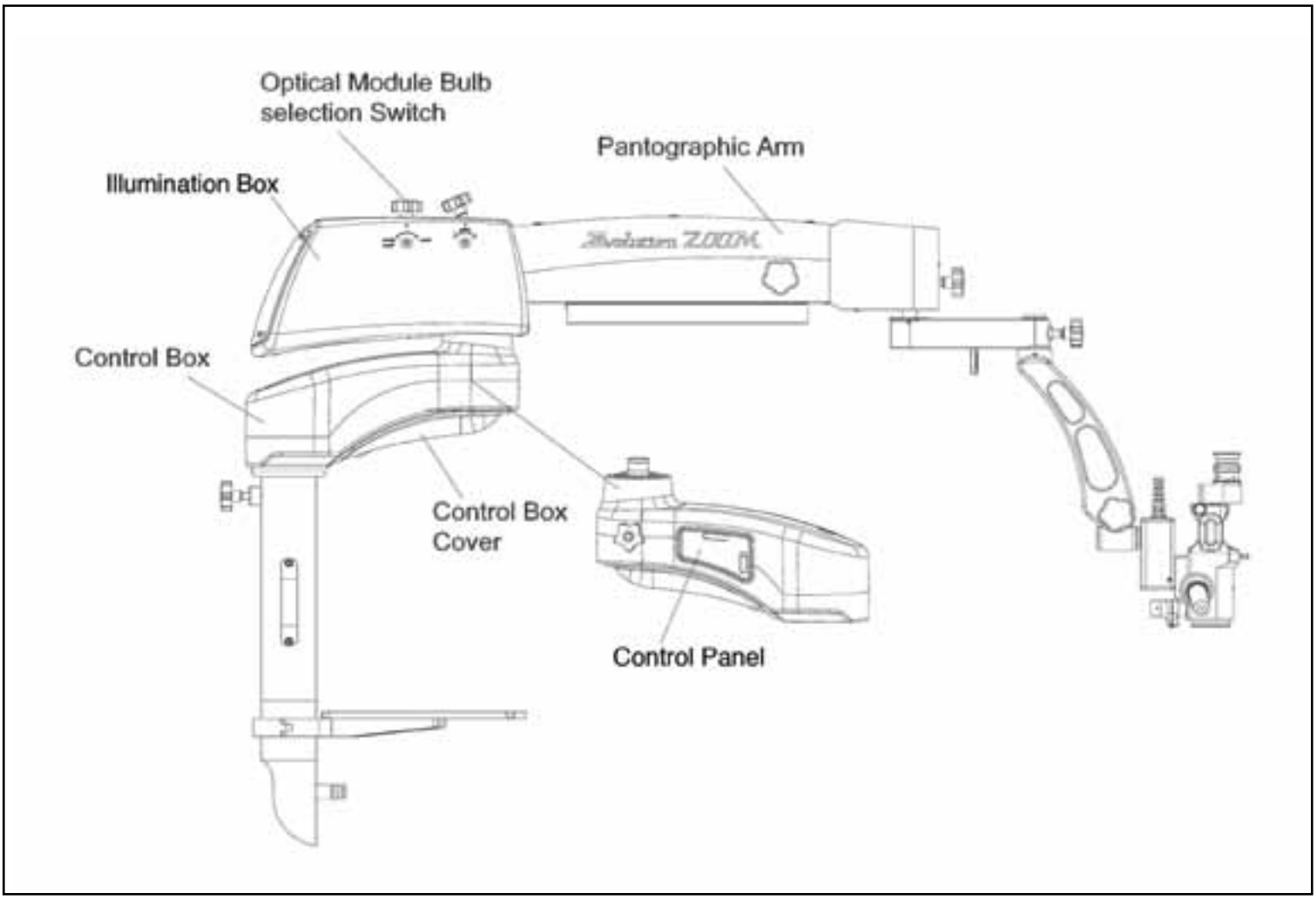
SEQUENCE SEEN FOR THE MAIN OBSERVER

5. Maintenance, Handling and Hygiene

Please note: this manual must be read in order for it to be possible to clean and maintain the Seiler Microscopes Evolution Zoom. This shall only be performed by qualified personnel. The use of corrosive chemical or other chemical products is not advisable.

WHEN THE BULB BURNS OUT DURING USE

- In order to avoid possible interruptions to work caused by a bulb burning out, the microscope is fitted with an extra bulb ready for use. To switch bulbs, simply turn the *Bulb Selection Switch*.

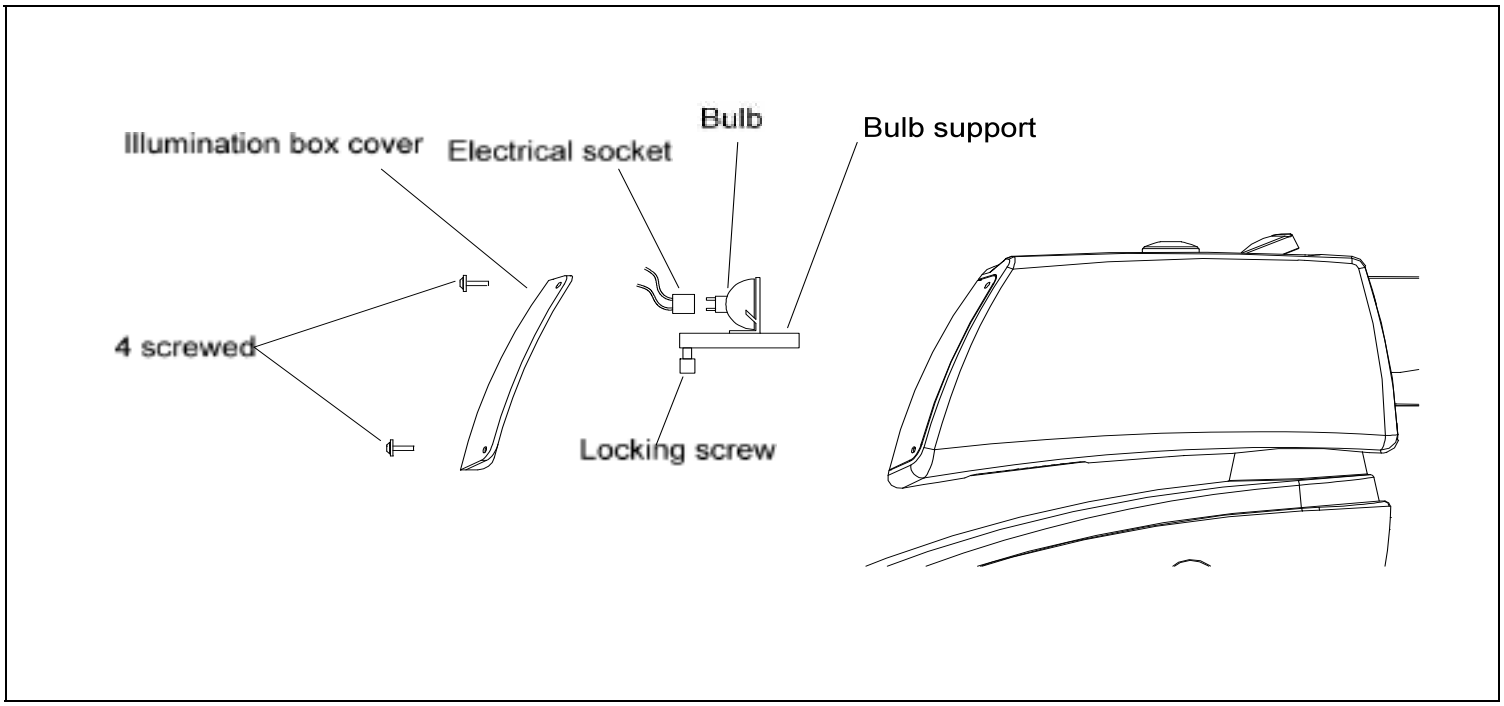


CHANGING THE BULB

- Shift the On / Off switch on the Control Box to the off position and disconnect the device from the mains;
- Check whether the set is hot, if it is hot, wait a few minutes until it has cooled down;
- Loosen the four screws holding the Illumination Box Cover in place, and remove it;
- Release the two Electrical Sockets which supply the Bulbs;
- Release the two Locking Screws from the Bulb Support;
- Remove the Bulb Support by pulling it out. It has a slide fitting;
- Replace the burnt out bulb
- Insert the Bulb Support
- Connect the two Electrical Sockets, taking care not to get them the wrong way round
- Assemble it again.

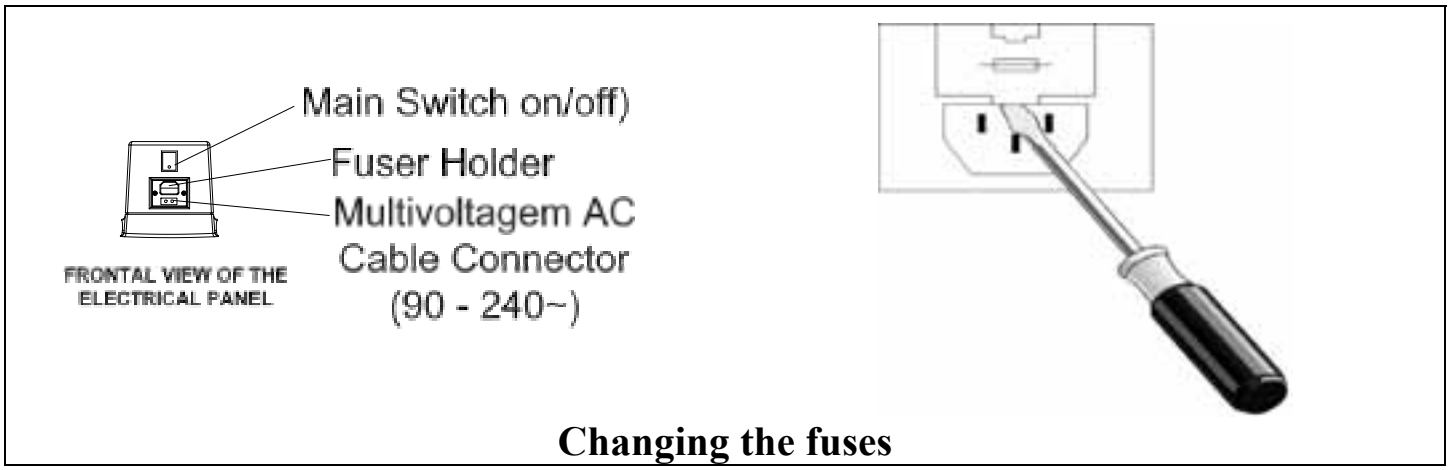
NOTE: Never touch the bulb.

Please note: when reassembling the device, do not invert the position of the electrical sockets. If this occurs, a bulb will always light up, but the positioning of the optical fiber inside the Illumination Box will not be aligned with the lamp being used, with the result that the light will not pass down the optical fiber and the surgical field will therefore not be illuminated. It is highly desirable that, whenever a light bulb is changed, the device be tested immediately afterwards.



CHANGING THE FUSES

- Next to the AC cable connector on the column, there is a fuse holder. There are two fuses inside the holder. Should the device stop functioning completely, switch it off, disconnect it from the mains, open the fuse door and replace the fuses if necessary. 5A fuses should only be used. The device comes with two spare fuses.



Changing the fuses

GENERAL CLEANING

- It is highly recommended that the Seiler Microscopes Evolution Zoom is not exposed to dust and other contaminating substances. Always cover the Optical Module with the Protective Cover when the unit is not being used;
- Dust, dirt and stains should only be removed using a clean, moist cloth and neutral soap;
- Before cleaning the floor of the area where the unit is installed, it is very important to store the Pedal in a safe place, away from possible splashing or spattering. The Multifunction Pedal has a Handle so that it can be hung from the Column.

CLEANING THE LENSES

Please note: Never use commercially available cotton wool buds; the adhesive attaching the cotton wool to the cotton wool bud could be dissolved by the alcohol and subsequently deposited on the lenses during cleaning, thereby compromising the qualities of the aforesaid lenses.

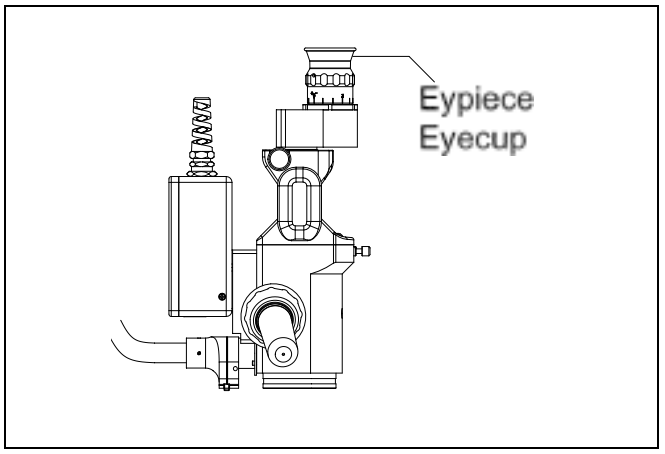
Do not remove the lenses from their holders, as this will lead to misalignment. Microscope prisms and lenses do not require frequent cleansing, apart from the Eyepieces and the Objective Lens.

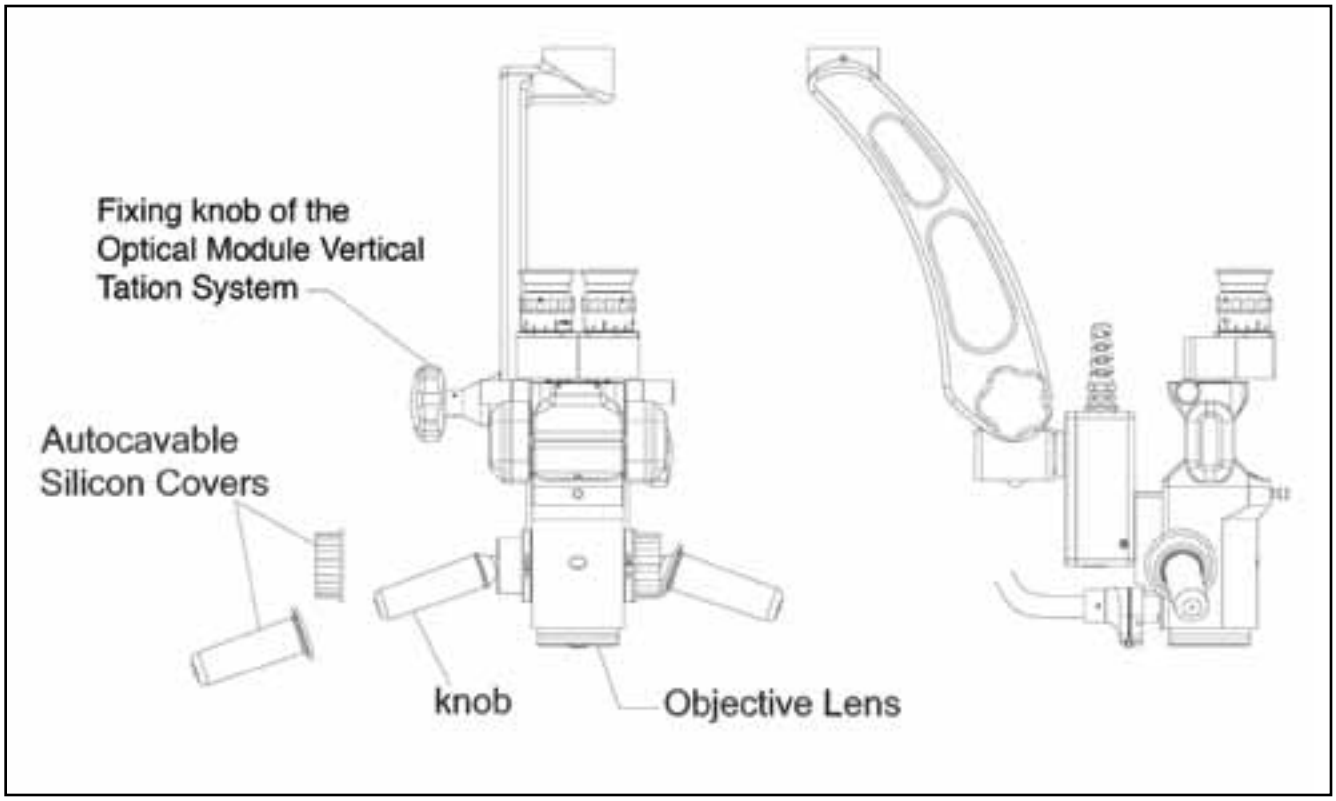
- Wrap a wad of cotton wool around the end of a toothpick without using any kind of glue or adhesive;
- Slightly moisten the bud in ethanol, gently rub this against the surface of the lens in a circular motion starting at the center of the lens and moving outwards;
- Perform the circular motion again using a second dry and clean bud;
- Repeat the steps above for each lens you wish to clean.

CONTROL ITEMS HANDLING AND HYGIENE

The Seiler Microscopes Evolution Zoom has been developed so as to enable the control elements used during the procedure to be cleaned easily.
The following can be detached from the microscope:

- Eyepiece Eyecup these are threaded onto the eyepieces and can be detached for cleansing purposes. In this case, sterilization using autoclave and/or stove is not recommended.





NOTE: The other control items (buttons, knobs and others) can be cleaned using a moist, clean cloth and neutral soap to remove dust, dirt or stains. Covering these elements with plastic film does not disrupt the operation of the microscope provided any such film is applied correctly.

DISCARD

The equipment's discard or own parts it must be in accordance with ambient regulations, directive 2002/96/EC, through recycling companies or disposal of solid residues permitted in a performance country.
In case of discarding of the equipment or pieces, the sending to the plant is not necessary.

Consults the authorized deliverer Seiler before the discard.

Do not discard the product or parts together with the common domestic residues.

Verifies constantly if all device's components don't present any risks to the environment, to the team and the public and, if the hospital protocols or local ambient protocols can in accordance with be discard with safety.

The discarding of the Seiler Microscopes Evolution Zoom and the used accessories, after its useful life, it's a user's responsibility and they must take care with the local and effective legislation in his region.

The operation of the Seiler Microscopes Evolution Zoom must be protected against not qualified inadvertent use.

6. Technical Details

GENERAL DETAILS

Vertical Working Height: minimum 27.5 inches and maximum 56 inches (without XY)
(with XY Positioning System, minimum 26 inches and maximum 55 inches)
Dimensions [Height x Length x Width]: 73 inches x 73 inches m x 31 inches.
Microfocus vertical adjustment limit: 40 mm.
Weight: 200 lbs. (not including accessories).
Gross weight including packaging: 330 lbs.

ELECTRICAL DETAILS

Power supply: 90 - 240~ – automatic selection
Power supply to the Video Camera: 12VDC.
Fuses: 5A.
Average Power Consumption: 200W.
Illumination bulb: PHILIPS EJM 21V 150W 50 Dichroic Reflector or similar.

OPTICAL DETAILS

Standard objective lens: f = 250mm.
Eyepieces: 12.5X.
Field of vision: 10-60mm.
Diopter setting: -6 to +6.
Minimum Interpupillary Distance: 55 to 110 mm for the Binocular Head Fixed at 45º and 48 to 78 mm for the Inclinable Binocular Head.
Magnification available in the Zoom version: 3X to 24X (continuous).
Illumination: provided by optical fibers.
Illumination field: 50mm.
Illumination brightness in the working area at full power: 80,000 lux (min.).

7. Accessories

The accessories available can be seen in below Figures.

BEAM SPLITTER

This accessory splits the image viewed by the Optical Module and redirects part of the image to the Camera Adapter and the other part to the 2nd Observer. This must be installed between the Optical Module and the Binocular Heads set.

XY SYSTEM

It moves the Optical set along the X and Y axes of the Horizontal Plane, with a movement of 22.5mm to either side from the central position. Requires the Multifunction Pedal in order to be operated.

MULTIFUNCTION PEDAL

Controls the following functions:
Switches the illumination on and off;
Adjusts the magnification of the Zoom system;
Motorized microfocusing;
Movement of XY system by means of the Footstick;
Illumination brightness adjusting.

8. Warranty

Seiler guarantees the flawless functioning of the Seiler Microscopes Evolution Zoom – except for the Bulbs – in according with its specifications for twelve (12) months, as from the date the customer receives the product.

The guarantee only covers manufacturing and functional defects of the systems and components of this device, which have been duly identified by an Seiler accredited representative.

In the event of technical assistance and maintenance, the purchaser shall bear all transportation, storage and postage costs. Any posting shall be performed using the original packaging while the guarantee is in force. Failure to comply with this requirement shall invalidate the guarantee.

This guarantee shall be automatically cancelled should the device be used in any manner other than that recommended in this User's Manual.
Seiler shall not be liable for any personal injury, harm or damages arising out of the misuse of this device.

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